

1 HANGER APPARATUS

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3
4 Field of the Invention

5
6 The present invention relates to devices especially
7 adapted for attaching a selected object to a selected
8 substrate.

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10 More particularly, the instant invention relates to
11 devices commonly referred to as hanger brackets.

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13 In a further and more specific aspect, the current
14 invention concerns an omnibus hanger assembly that is
15 readily securable to various substrates.

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17
18 Background of the Invention

19
20 It is common practice to permanently or detachably
21 attach assorted objects to structurally diverse substrates.
22 Exemplary is the hanging of pictures on the interior walls
23 of a building, the stringing of festive holiday lights on
24 the eaves of a house and the retention of keys or key

1 chains on a mounted board.

2

3 To accommodate the varied substrates, the prior art
4 has provided numerous hanger brackets, each specifically
5 configured for securement to a substrate fabricated of a
6 particular material. For example, screw hooks or other
7 hanger brackets incorporating a nail or a wood screw are
8 required for securement to a substrate fabricated of wood
9 or similar material. Relatively thin sheet material
10 requires a hanger bracket incorporating a sheet metal
11 screw. Substrates fabricated of a frangible material, such
12 as sheet rock or wallboard require a bracket including a
13 molly or toggle bolt that will distribute the holding force
14 over a substantial area. Securing to a concrete substrate
15 generally entails the insertion of a lead or plastic
16 anchor, which in turn will accept a lag screw.

17

18 With reference to the foregoing, the hanger bracket is
19 commonly affixed from the face side of the substrate. The
20 rear side of a substrate is generally not accessible.
21 Therefore, use of a two-part attachment, such as a bolt and
22 nut, is not possible.

23

24 The profusion of prior art hanger brackets, each

1 devised for use with a specific substrate, is further
2 complicated by necessity of a drilling or otherwise forming
3 a hole of precise dimension to accommodate the attachment
4 member relative the chosen bracket. In an attempt to
5 resolve this complexity, the prior art has provided a
6 hanger bracket which is adhesively affixed to the
7 substrate. Adhesively affixed hanger brackets, however,
8 are restricted to a reduced load bearing capacity.
9 Further, such hanger brackets are not universally usable
10 with all substrates.

11

12 Given the specificity of prior art hanger brackets and
13 the associated diversity of substrates, it would be highly
14 desirable to provide an omnibus hanger bracket that is
15 readily securable to substrates of various and diverse
16 construction. It is intended that such a bracket be
17 relatively inexpensive to fabricate and easily secured to a
18 selected substrate.

1 Summary of the Invention

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3 The above perplexities and others are at least

4 partially solved and the above purposes and others realized

5 in new and improved hanger apparatus having omnibus

6 properties. In accordance with the principle of the

7 present invention, a preferred embodiment of the invention

8 is a hanger apparatus having a helix including an anterior

9 coil and a posterior coil. Engagement means, preferably in

10 the form of a hook, for receiving and holding a selected

11 object is carried by the helix. Preferably the posterior

12 coil has a diameter larger than the diameter of the

13 anterior coil. The inclusion of one or more coils of

14 incrementally graduated diameters intermediate the anterior

15 coil and the posterior coil imparts a frusto-conical shape

16 to the helix. It is anticipated that the helix is

17 fabricated of a strand of material whereby the helix has a

18 hollow core. The strand of material may be substantially

19 rigid or, alternately, rigid.

20

21 In accordance with the principle of the invention,

22 provided is a hanger assembly that consists of a substrate,

23 a helix including at least first and second coils for

24 receiving said substrate therebetween and engagement means

1 carried by the helix. More specifically, the substrate
2 includes first and second sides wherein the first coil of
3 the helix is received in juxtaposition with the first side
4 of the substrate and the second coil of the helix is
5 received in juxtaposition with the second side of the
6 substrate. The coils are mutually biased for compressively
7 retaining the substrate therebetween. The engagement means
8 is in the form of a hook depending from one of the coils.

9
10 In accordance with the principle of the invention,
11 provided is another embodiment of a hanger assembly
12 consisting of a hanger apparatus including a tapered helix
13 having a plurality of coils including an anterior coil
14 having a first diameter and a posterior coil having a
15 second diameter; the anterior coil being of lesser diameter
16 than the diameter of the posterior coil. Engagement means,
17 preferably in the form of a hook is carried by the
18 posterior coil. The assembly further includes a substrate
19 having an opening for receiving said anterior coil
20 therethrough. It is within the scope of the invention that
21 the opening in the substrate has a diameter smaller than
22 the diameter of the anterior coil. It is also perceived
23 that the coils of the helix may be fabricated of a
24 substantially rigid or substantially resilient material.

1

2 In accordance with the principle of the invention,
3 provided is yet another embodiment including a strand
4 having a finite diameter formed into a helix and having
5 engagement means integral therewith. Also provided is a
6 substrate having an opening sized to receive the strand
7 therethrough. Selectively, the stand may be substantially
8 rigid or, alternately, rigid. Engagement means for
9 receiving and holding a selected object, preferably in the
10 form of a hook, is carried by the helix.

11

12 In accordance with the principle of the present
13 invention, contemplated is a method of securing a selected
14 object to a selected substrate. In accordance with a
15 preferred embodiment, the method includes the steps of
16 forming a strand of material into a helix having engagement
17 carried thereby. The method also includes the step of
18 creating an opening in the substrate for receiving the
19 strand therethrough. In a more specific embodiment, the
20 step of forming includes the substep of configuring the
21 strand into a hollow tapered helix having an anterior coil
22 and a posterior coil and sizing the opening in the
23 substrate to receive the anterior coil therethrough. And
24 additional step is compressively receiving the substrate

- 1 between the anterior coil and the posterior coil.
- 2 Alternately, the additional step consists of frictionally
- 3 receiving the helix within the opening.

1 BRIEF DESCRIPTION OF THE DRAWINGS

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3 Referring to the drawings:

4
5 Fig. 1 is a perspective view of a hanger apparatus
6 constructed in accordance with the principle of the instant
7 invention;

8
9 Fig. 2 is a side elevation view of the apparatus of
10 claim 1;

11
12 Fig. 3 is a top plan view of the apparatus of Claim 1;

13
14 Fig. 4 is a rear end elevational view of the apparatus
15 of Claim 1;

16
17 Fig. 5 is a perspective view of an initial step in the
18 method of fabricating a hanger assembly in accordance with
19 the principle of the present invention;

20
21 Fig. 5a is a view generally similar to the view of
22 Fig. 5 and illustrating an intermediate step in the method
23 of fabricating a hanger assembly;

1 Fig. 5b is another view generally similar to the view
2 of Fig. 5 and depicting a terminal step in the method of
3 fabricating a hanger assembly;

4

5 Fig. 6 is a perspective view especially showing the
6 rear side of a hanger assembly in accordance with the
7 principle of the instant invention;

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9 Fig. 7 is a vertical sectional view taken along the
10 line 7 - 7 in Fig. 6 and especially illustrating an
11 alternate embodiment of the invention in accordance with
12 the principle thereof;

13

14 Fig. 8 is a view generally similar to that of Fig. 7
15 and showing another alternate embodiment in accordance with
16 the teachings of the present invention; and

17

18 Fig. 9 is a fragmentary perspective view of a roof and
19 soffit of a building incorporating a hanger assembly in
20 accordance with the principle of this invention.

1 DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

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3 Turning now to the drawings, in which like reference
4 characters indicated corresponding elements through the
5 several views, attention is first directed to Fig. 1 in
6 which is seen a hanger apparatus, embodying the principle
7 of the instant invention and generally designated by the
8 reference character 10, including helix 12 and hook 13.

9 With additional reference to Figs. 2 and 3, it is seen that
10 helix 12 includes anterior coil 14, posterior coil 15 and a
11 plurality of intermediate coils 17. Anterior coil 14 has a
12 diameter designated D1. Posterior coil 15 has a diameter
13 designated D2. Diameter D2 is larger than diameter D1.
14 The diameters of the several intermediate coils 17 are
15 incrementally graduated. Accordingly, helix 12 is tapered
16 to assume a frusto-conical shape having larger rearward end
17 defined by posterior coil 15 and a smaller forward end
18 defined by anterior coil 14. As particularly illustrated
19 in Fig. 5, anterior coil 14, posterior coil 15 and the
20 several intermediate coils 17 define a hollow core 18
21 within helix 12.

22

23 Preferably, hanger apparatus 10 including coil 12 and
24 hook 13, are integrally fabricated of a single strand of

1 generally cylindrical material. Preferred materials
2 include spring tempered metal and resilient plastic.
3 Depending upon specific use, the apparatus may also be
4 fabricated of a substantially rigid material. Further
5 details of hanger apparatus 10, and the use thereof as an
6 element in a hanger assembly, will become readily apparent
7 to those skilled in the art as the description ensures.

8

9 Fig. 5 depicts the initial step in the method of
10 creating a hanger assembly including previously described
11 hanger apparatus 10 is the selection of a substrate.
12 Chosen for purposes of illustration herein is a substrate
13 20 in the form of a panel such as may be of metal, wood or
14 plastic and having an exposed or front surface 22. As the
15 method proceeds, an opening 23 is formed, as by drilling or
16 other conventional means, in panel 20. In accordance with
17 the immediately preferred embodiment of the invention,
18 opening 23 has a diameter D_3 which is larger than diameter
19 D_1 of anterior coil 14 and smaller than diameter D_2 of
20 posterior coil 15.

21

22 Subsequently, as illustrated in Fig. 5a, anterior coil
23 14 of helix 12 is inserted into opening 23 of substrate 20.
24 Hanger apparatus 10 is then rotated as denoted by the

1 arcuate arrowed line A. The rotation continues until
2 substrate 20 is received between two coils of helix 12 as
3 further noted in Fig. 5b. One or more coils of helix 12
4 will advance to the unexposed or rear surface 24 of
5 substrate 20 as seen in Fig. 6. The union of hanger
6 apparatus 10 with substrate 20 provides a hanger assembly,
7 generally designated by the reference character 25, as
8 clearly seen in Fig.

9

10 Illustrated in Fig. 7 is an alternate embodiment of a
11 hanger assembly, generally designated by the reference
12 character 30. The immediate embodiment, in general
13 similarity to the previously described embodiment 24,
14 includes a substrate, generally designated, 32 in the form
15 of a relatively thin panel and a hanger apparatus,
16 generally designated 33, having integral hook 34. It is
17 noted that the strand of material of which hanger apparatus
18 is formed has a diameter designated D4.

19

20 Hanger assembly 30 differs from the previously
21 described embodiment 25 in that the opening 36 in substrate
22 32 has a diameter D5 which is sized to receive therethrough
23 a strand having diameter D4. Further modification of the
24 immediate hanger assembly 30 resides within hanger

1 apparatus 33 having only first and second coils 37 and 38,
2 respectively. The coils 37 and 38 are mutually biased
3 inward, as indicated by the arrowed lines B and C,
4 respectively, thereby compressively receiving substrate 32
5 therebetween. More specifically first coil 37 resides in
6 juxtaposition with first surface 39 of substrate 32 and
7 second coil 38 resides in juxtaposition with second surface
8 40 of substrate 32. It is immediately apparent that hanger
9 apparatus can be simply clipped over an edge of a selected
10 substrate. In all other aspects not specifically noted,
11 hanger assembly 30 is analogous to hanger assembly 25.

12

13 Another alternate embodiment of a hanger assembly
14 constructed in accordance with the principle of the present
15 invention is seen with reference to Fig. 8. The immediate
16 embodiment, generally designated by the reference character
17 50, includes substrate 52 in which the first and second
18 sides 53 and 54, respectively, are widely spaced. This
19 embodiment incorporates previously described hanger
20 apparatus 10. Formed in substrate is an opening 55 having a
21 diameter which is larger than the diameter of anterior coil
22 14 and smaller than the diameter of posterior coil 15.
23 Fabricated of a strand of either resilient or substantially
24 rigid, hanger apparatus is inserted into opening 55. While

1 pressure is exerted in the direction designated by the
2 arrowed line E, hanger apparatus is rotated, thereby
3 frictionally engaging helix 12 within opening 55.

4

5 Illustrated in Fig. 9 is a section of a conventional
6 building roof, generally designated by the reference
7 character 60, including fascia 62, soffit 63 and tiles 64.
8 As will be appreciated by those skilled in the art, soffits
9 are commonly provided with ventilation openings 65. In
10 accordance with the immediate embodiment of the invention
11 soffit 63 functions as the substrate. Openings 65 receive
12 helix 12 of previously described hanger apparatus 10 to
13 provide an embodiment of a hanger assembly. Hook 13 is
14 capable of receiving and holding a selected object. For
15 illustrative purposes, the selected object is herein
16 illustrated as a string of festive holiday lights 67. It
17 is particularly noted that access to the rear side of the
18 substrate is not required and that the opening can be
19 blind.

20

21 The present invention is described above with
22 reference to preferred embodiments. However, those skilled
23 in the art will recognize that changes and modifications
24 may be made in the described embodiments without departing

1 from the nature and scope of the present invention.
2 Various changes and modifications to the embodiments herein
3 chosen for purposes of illustration will readily occur to
4 those skilled in the art. To the extent that such
5 modifications and variations do not depart from the spirit
6 of the invention, they are intended to be included within
7 the scope thereof.

8

9 Having fully described the invention in such clear and
10 concise terms as to enable those skilled in the art to
11 understand and practice the same, the invention claimed is: